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10/816,703	04/02/2004	Clive Reginald Steer	M00A259	1183

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The BOC Group, Inc.
Legal Services-Intellectual Property
575 Mountain Ave.
Murray Hill, NJ 07974

EXAMINER	
TRINH, TAN H	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/816,703	STEER, CLIVE REGINALD	
	Examiner	Art Unit	
	TAN TRINH	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,8,10-14,17,23-29,37,39-41 and 44* is/are rejected.

7)☒ Claim(s) *5-7,9,18-22,30,31,34-36,38,42,43 and 45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because; the abstract is containing 4 separated paragraphs. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 8, 10-14, 17, 23-29, 37, 39-41 and 44, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayasu (U. S. Patent No. 5029218) in view of Ohashi (U.S. Patent No. 6,625,285). Further in view of Eichler (U.S. Pub. No. 2003/0228019).

Regarding claims 1, 12 and 25, Nagayasu teaches a system for at least partially canceling noise (see figs. 1 and 11, col. 4, lines 3-9), the system comprising: a member configured to be located in the vicinity (13) of a noise producing object (10) (see fig. 1, member system (12) col. 5, lines 29-51), wherein the member comprises a plurality of elements (see fig.1, plurality of elements sensor 22 and 26, microphone 40, and speaker 30), at least some of the elements (22 and 26) being configured to detect noise from the noise producing object (10), and at least some of the elements (30) being configured to emit sound (see col. 5, lines 29-51 and col. 9, lines 24-60); and a controller (25) configured to receive at least one signal indicative of noise detected by at least some of the elements and to send at least one signal so as to cause at least some of the

elements to emit sound (see col. 9, lines 24-60), Nagayasu teaches the A signal S sent to the speaker 30 is taken as a reference signal, and a signal D detected by the first sensor 22 and a signal P detected by a second sensor such as a microphone 40 arranged at the object point 13 are taken to be response signals. The signals S, D and P are inputted to a transfer function measuring device 42 such as a multi-channel FFT analyzer whereby a transfer function G.sub.SD between the speaker 30 and the first sensor 22 and a transfer function G.sub.SP between the speaker and the microphone 40 are obtained. But Nagayasu fails to teach emitting sound at a polarity substantially opposite to polarity of the detected noise.

However, Ohashi teaches the cancellation signal production element 24 produces, as such a cancellation signal as described above, based on the driving control signal to the acoustic driver 112 produced by the cooling control system 11 (control signal generation element 15) described above, an opposite phase signal which has a signal waveform of the opposite phase to that of the signal waveform of the driving noise and can thus cancel and erase the driving noise of the acoustic driver 112 (see fig. 3, noise control system 12, generating the signal with opposite phase to cancel the noise, col. 12, lines 29-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above teaching of Nagayasu with Ohashi, in order to use the output sound wave as cancellation sound for driving noise (see suggested by Ohashi on col. 11, lines 33-43).

Still regarding claims 1, 12 and 25, Nagayasu teaches the noise at the aperture 13 of the chamber 12 is continuously canceled by using the noise cancellor, according to the processes shown in FIG. 2. The first sensor 22 detects noise from the compressor 10 and obtains input

signals X(n-1) (Process S1). The signal processor 25 calculates control signals S2(n) by covoluting the input signals by the filter factor series hm(i) as FIR filters according to Eq. (5) (Process S2). These control signals are inputted to the speaker 29 via the D/A converter 29, and the speaker 30 produces control sound (Process S3). At the aperture 13, the noise from the compressor 10 and the control sound from the speaker 30 interfere with each other so as to cancel each other. Thus, if the noise and the sound completely cancel each other, the sound pressure at the aperture 13 is perfectly zero. In genera, however, it is very rare that the sound pressure is completely zero in this step. Therefore, the sound pressure at the aperture 13 is detected by the second sensor 26 and inputted to the signal processor 25 as an error signal e (Process S4). The signal processor 25 changes the filter factor series h(i), based on the error signal, such that the sound pressure at the aperture 13 becomes zero (see fig. 2, col. 5, lines 66-col. 6, lines 28). But Nagayasu or Ohashi does not mention the newly added limitation of: *emit at "a frequency and intensity substantially the same as that of the detected noise"*. However, Such teaching is taught by Eichler (see fig. 1A-B, page 2, section [0022], page 4, section [0057], and fig. 2A-C, page 6, section [0071] and [0079]). In this case, the emitting the sound (frequency) is intensity substantially the same as that of the detected noise, so that the noise cancellation system can be substantially cancels the actual noise (see page 6-7, section [0079]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above combination of the teaching of Nagayasu and Ohashi, with Eichler, in order to provide the user hears mostly a sound corresponding to signal and substantially none of the ambient noise (see suggested by Eichler on page 7, section [0079]).

Regarding claim 41, Nagayasu teaches a method of at least partially canceling noise (see figs. 1 and 11, col. 4, lines 3-9), comprising: detecting noise from a noise producing object (see col. 5, lines 29-51); and analyzing the detected noise so as to determine when the detected noise is indicative of at least one condition of the noise producing object (see fig. 9, sensor 22 at noise producing object 10 of the point object 13, col. 9, lines 24-60). Nagayasu teaches the A signal S sent to the speaker 30 is taken as a reference signal, and a signal D detected by the first sensor 22 and a signal P detected by a second sensor such as a microphone 40 arranged at the object point 13 are taken to be response signals. The signals S, D and P are inputted to a transfer function measuring device 42 such as a multi-channel FFT analyzer whereby a transfer function G.sub.SD between the speaker 30 and the first sensor 22 and a transfer function G.sub.SP between the speaker and the microphone 40 are obtained. But Nagayasu fails to teach emitting sound at a polarity substantially opposite to polarity of the detected noise.

However, Ohashi teaches the cancellation signal production element 24 produces, as such a cancellation signal as described above, based on the driving control signal to the acoustic driver 112 produced by the cooling control system 11 (control signal generation element 15) described above, an opposite phase signal which has a signal waveform of the opposite phase to that of the signal waveform of the driving noise and can thus cancel and erase the driving noise of the acoustic driver 112 (see fig. 3, noise control system 12, generating the signal with opposite phase to cancel the noise, col. 12, lines 29-41).Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above teaching of Nagayasu with Ohashi, in order to use the output sound wave as cancellation sound for driving noise (see suggested by Ohashi on col. 11, lines 33-43).

Still regarding claim 41, Nagayasu or Ohashi does not mention the newly added limitation of: *emit at "a frequency and intensity substantially the same as that of the detected noise*". However, Such teaching is taught by Eichler (see fig. 1A-B, page 2, section [0022], page 4, section [0057], and fig. 2A-C, page 6, section [0071] and [0079]). In this case, the emitting the sound (frequency) is intensity substantially the same as that of the detected noise, so that the noise cancellation system can be substantially cancels the actual noise (see page 6-7, section [0079]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above combination of the teaching of Nagayasu and Ohashi, with Eichler, in order to provide the user hears mostly a sound corresponding to signal and substantially none of the ambient noise (see suggested by Eichler on page 7, section [0079]).

Regarding claims 8, 17 and 37, Nagayasu teaches the system comprises a plurality of members (see fig. 1, members 22, 26 and 30) , at least some of the members being configured to be connected together so as to form an enclosure configured to be placed at least partially around the noise producing object (10) (see fig. 1, the enclosure configured of 13 in system 12).

Regarding claims 10, 23 and 39, Nagayasu teaches a noise producing object (see fig. 1 and 11, noise producing object 10, col. 5, lines 29-51).

Regarding claims 11, 24, 40 and 44, Nagayasu teaches the noise producing object comprises at least one of a pump, a motor (see fig. 1, compressor 10, col. 5, lines 30-36).

Regarding claim 13, Nagayasu teaches the at least one noise detector comprises at least one of the elements (see fig. 1, sensor 22 for noise detector element).

Regarding claim 14, Nagayasu teaches the at least one noise detector is discrete from the elements (see fig. 1, sensor 22 for noise detector element).

Regarding claim 26, Nagayasu teaches further comprising a member configured to be located in the vicinity of the noise producing object (see fig. 1, member configured located in the vicinity 13 and system 12), wherein the member comprises a plurality of elements (see fig. 1, elements 22, 26 and 30), at least one of the elements comprising the at least one sound emitter (30) (see fig. 1, speaker 30 is sound emitter).

Regarding claim 27, Nagayasu teaches at least one of the elements comprises the at least one noise detector (see fig. 1, sensor 22 is noise detector).

Regarding claim 28, Nagayasu teaches an enclosure (13) configured to be placed at least partially around the noise producing object (10) (see fig. 1, member configured located in the vicinity 13 and system 12), wherein at least a portion of the enclosure comprises a plurality of elements (see fig. 1, elements 22, 26 and 30), at least one of the elements comprising the at least one sound emitter (30) (see fig. 1, speaker 30 is sound emitter).

Regarding claim 29, Nagayasu teaches wherein at least one of the elements comprises the at least one noise detector (see fig. 1, sensor 22 and 26 is noise detector).

4. Claims 2-4, 15-16 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayasu (U. S. Patent No. 5029218) in view of Ohashi (U.S. Patent No. 6,625,285) further in view of Klenerman (U.S. Patent No. 6,589,727).

Regarding claims 2, 15 and 32, Nagayasu teaches the elements comprise piezoelectric material (see fig. 1 and 9, the elements sensors 22 and 26, microphone 40 and speaker 30). In this case, the elements sensors 22 and 26, microphone 40 and speaker 30 can be piezoelectric sensor and piezoelectric microphone and piezoelectric speaker.

Moerover, Klenerman teaches elements comprise piezoelectric material (see fig. 1 and 8, col. 2, lines 51-62, col. 4, lines 5-11 and lines 45-49).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above combination of the teaching of Nagayasu and Ohashi, with Klenerman, in order to detect acoustic noise produced (see suggested by Klenerman on col. 4, lines 47-49).

Regarding claims 3, 16 and 33, Nagayasu fails to teach the elements comprise at least one of ceramic and quartz.

However, Klenerman teaches elements comprise quartz material (see fig. 1 and 8, col. 2, lines 51-62, col. 4, lines 5-11 and lines 45-49).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above combination of the teaching of Nagayasu and Ohashi, with Klenerman, in order to detect acoustic noise produced (see suggested by Klenerman on col. 4, lines 47-49).

Regarding claim 4, Nagayasu teaches the elements. But Nagayasu dose not mention the elements substantially define at least one surface of the member.

However, Klenerman teaches elements substantially define at least one surface of the member (see col. 2, lines 51-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above combination of the teaching of Nagayasu and Ohashi, with Klenerman, in order to detect acoustic noise produced (see suggested by Klenerman on col. 4, lines 47-49).

Allowable Subject Matter

5. Claims 5-7, 9, 18-22, 30-31, 34-36, 38, 42-43 and 45, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for allowance

6. The following is an examiner's statement of reasons for allowance:

Claims 5-7, 9, 18-22, 30-31, 34-36, 38, 42-43 and 45 are allowed with the same reasons set forth in the previous Office action (paper mailed on 07-11-2007).

Response to Arguments

7. Applicant's arguments with respect to claims 1-45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(571) 273-8300, (for Technology Center 2600 only)

*Hand-delivered responses should be brought to the Customer Service Window (now located at the **Randolph Building, 401 Dulany Street, Alexandria, VA 22314).***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tan Trinh whose telephone number is (571) 272-7888. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor, Anderson, Matthew D., can be reached at (571) 272-4177.

The fax phone number for the organization where this application or proceeding is assigned is **(571) 273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Technology Center 2600 Customer Service Office** whose telephone number is **(703) 306-0377**.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tan H. Trinh
Division 2618
April 25, 2008

/TAN TRINH/
Primary Examiner, Art Unit 2618
4-25-2008